



Missouri Department of Natural Resources

Division of Environmental Quality

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1998 Annual Report

The Air Pollution Control Program produces an annual report to provide Missouri residents information about the status of air quality in the state. The publication is made available here in electronic format. The publication is divided into chapters for quicker download.

- [Chapter 1: Introductions and Highlights](#) (05/00) 266 KB
- [Chapter 2: Major Pollutants and Standards](#) (05/00) 254 KB
- [Chapter 3: Air Quality Monitors in Missouri](#) (05/00) 275 KB
- [Chapter 4: Overview of Missouri's Air Quality](#) (05/00) 195 KB
- [Chapter 5: Ozone in Missouri](#) (05/00) 541 KB
- [Chapter 6: Lead in Missouri](#) (05/00) 118 KB
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- [Chapter 8: Missouri Air Conservation Commission](#) (05/00) 177 KB
- [Chapter 9: Air Pollution Rules, Regulations and State Implementations Plans](#) (05/00) 119 KB
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Department of
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Revised on Monday July 05 2010

Introduction

Achieving healthy air quality for all Missourians, that's the mission of the Missouri Department of Natural Resources' (DNR) Air Pollution Control Program (APCP). The work of DNR to meet this goal can only be successful when it is part of a total team effort involving citizens, business, industry and local governments.

Local involvement means taking a stand on air quality, being part of the process of providing DNR with your input and supporting the regulations and actions that you believe in. It involves keeping up with the issues, taking note of pollution, reporting unusual emissions or smoke to the Department of Natural Resources and speaking up when you feel your right to clean air is being

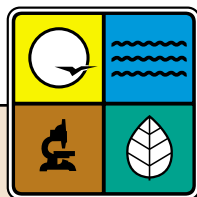


violated. It also involves doing your part with regular car tune-ups, using low solvent products, lowering your energy consumption and composting yard waste instead of burning it.

The state of Missouri is responsible for protecting the health of its citizens with an adequate margin of safety, at the same time achieving a consistent level of progress that demands

careful use of our valuable resources. Economic growth should include common sense strategies for reducing air pollution and protecting public health as industry, manufacturing and service facilities and jobs expand. Missouri's economy will not remain robust over the long term unless it functions in an environmentally sustainable manner.

When you learn more about the air around you and claim ownership of it, you take a major step toward a healthy life. Air is a natural resource and it belongs to all of us.



As a recipient of federal funds, the Missouri Department of Natural Resources does not

discriminate on the basis of race, color, religion, national origin, age, sex, or disability. Any person who believes he or she has suffered discrimination may file a complaint with the Department of Natural Resources or with the Office of Equal Opportunity, U.S. Department of the Interior, Washington, D.C., 20240.

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1998 Air Quality Highlights

COOPERATIVE DEVELOPMENT OF REGULATIONS

Involving the public in the process of making air quality rules helps to create fair, effective regulations that have broad support. In 1998, DNR continued its commitment to public participation by convening workgroups to help develop air regulations. A workgroup brings industry and the public together with government agencies to share concerns and exchange ideas while developing regulations.

The Concentrated Animal Feeding Operations Odor Issues Workgroup was convened by the Missouri Air Conservation Commission to examine odor issues related to Class 1A operations, the largest size classification of concentrated animal feeding facilities in the state. The workgroup included interested parties from industry, environmental organizations and regulatory agencies. The workgroup met from April through June 1998, then made recommendations to the commission for changes in the rules to amend current regulations to reduce odor emission from Class 1A concentrated animal feeding operations.

The Construction Permit Streamlining Workgroup continued improving the Construction Permit Regulations and reviewing the internal procedures and policy for the program to review permit applications. This workgroup placed a major emphasis on improving the construction permit application forms and instructions. This effort alone


should save hundreds of hours for both applicants and reviewers.

The St. Louis Fuels Summit was held in June to discuss fuel control options for the St. Louis ozone nonattainment area, including federal Reformulated Gasoline (RFG) and several state fuel control programs. Summit participants included representatives from the St. Louis business community, the automobile, petroleum and agriculture industries, environmental and public interest organizations, government agencies, elected officials and other interested parties. The summit also included a 22-member technical panel of experts on gasoline production, distribution, usage and regulation as well as air quality issues. The summit was successful in providing a forum for participants to voice their opinions and concerns on fuel control and alternative gasoline.

FUELS

DNR continues to develop ways for St. Louis and Kansas City to reduce emissions of volatile organic compounds (VOCs) that contribute to the formation of ground-level ozone (urban smog). St. Louis is required to reduce VOCs due to its status as an ozone nonattainment area, while the Kansas City reductions are in response to violations of the ozone standard in 1995 and 1997.

In the St. Louis area, recovery of gasoline vapors at fuel pumps is one of the most effective ways to reduce VOC emissions. DNR developed the Missouri Performance Evaluation Test Procedures (MOPETP), a comprehensive set of tests designed



to determine the efficiency of gasoline vapor recovery systems and components. In 1998, approximately seven manufacturers of gasoline dispensing equipment were either testing or preparing to participate in the MOPETP program.

DNR also continued the operating permit program for gas stations in the St. Louis area. The program requires vapor recovery equipment to be tested to assure it is functioning properly. About 956 active gasoline stations in the St. Louis ozone nonattainment area are subject to the operating permit rule. The deadline for completing the initial permits was January 1, 1999.

In 1998, a major strategy to reduce VOC emissions in Kansas City and St. Louis was to use low Reid vapor pressure (RVP) gasoline. During summer months, low RVP gasoline evaporates less than conventional gasoline, which reduces emissions of VOCs. Low RVP gas was first required in St. Louis in 1994 and in Kansas City in 1997. Low Reid vapor pressure gasoline was used in both areas from June 1 to Sept. 15, 1998.

Following the St. Louis Fuel Summit, on July 10, 1998, the governor submitted a letter requesting that EPA require federal Reformulated Gasoline (RFG) for the St. Louis ozone nonattainment area starting June 1, 1999. Based on this request, RFG will replace low Reid vapor pressure gasoline as St. Louis' fuel control strategy in 1999. RFG is a gasoline formula designed to burn cleaner than conventional gasoline all year round, not just during the summer. RFG reduces exhaust emissions as well as evaporative

emissions and is administered and enforced by the EPA.

The revised Kansas City ozone maintenance plan, adopted by the Missouri Air Conservation Commission in February 1998, recommends that RFG be sold in the Kansas City area starting in 2000.

OZONE TRANSPORT

Air pollution can spread across geographic boundaries. Initiatives involving regional cooperation and study of air quality are becoming more common. In October 1998, the U.S. Environmental Protection Agency (EPA) issued a rule that will require Missouri to reduce emissions of nitrogen oxides (NO_x), which is a commonly transported air pollutant contributing to ozone formation. In 1998, DNR began development of regulations to comply with EPA's regional NO_x control plan. These regulations will affect utilities, cement kilns and other large industrial activities.

CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOs)

The recent growth of large-scale animal feeding operations is changing the way animals are raised in Missouri. These large-scale operations concentrate animals into a relatively small area and can produce waste amounts equivalent to those produced by many small cities. As a result they present a number of environmental challenges. Since the 1970s, concentrated animal feeding operations have been exempt from air pollution regulations. Responding to citizen and environmental complaints about odors, DNR convened a work group of industry, environmental and

regulatory representatives to study the largest classification of these facilities, Class 1A CAFOs, for possible solutions. The workgroup recommended amending the current odor regulations to remove the exemption presently given to Class 1A operations. Under the recommended amendments, existing Class 1A operations would be required to implement a plan to reduce odor from their facilities and meet an emission limit. All existing Class 1A operations would be required to come into full compliance with the limit by 2002. New Class 1A facilities would be expected to prepare an odor control plan before beginning operation. DNR will monitor these operations over the next few years to look at the specific chemical compounds they emit.

ENFORCEMENT ACTIONS AND RESULTS

DNR's vigilance in the enforcement of air law in 1998 resulted in 818 Notices of Violation (NOVs). Settlements were reached in 139 cases. These settlements resulted in paid penalties of \$501,900 and suspended penalties totaling \$188,150.

OPERATING PERMITS

After being one of the final states approved by EPA to run an operating permits program, Missouri became one of the first states to begin issuing operating permits. The APCP's operating permits program began full-scale operation in August 1997. In 1998, the program issued 51 Part 70 (major), 38 Intermediate permits and 46 Basic permits.

CONSTRUCTION PERMITS

Among the 1,012 construction permit actions made in 1998, notable major

level permits were issued for the Proctor and Gamble Paper Products in Cape Girardeau County, Panhandle Eastern Corporation in Pettis County and AECI in Nodaway County. Issuance of these permits involved extensive engineering review, publication of legal notices and coordinating the availability of materials for public review.

THE SMALL BUSINESS COMPLIANCE ADVISORY COMMITTEE

Section 507 of the 1990 Clean Air Act Amendments requires states to implement a three-component program to assist small businesses in complying with the air regulations. This is commonly called the small business assistance program. The three components consist of the small business ombudsman, the technical assistance function to small businesses and the compliance advisory panel. In Missouri, the compliance advisory panel is known as the Small Business Compliance Advisory Committee (SBCAC).

The SBCAC is comprised of seven members: Two are appointed by the governor, one each is appointed by the majority and minority leaders of the House and Senate, and one is appointed by the director of the Department of Natural Resources. The SBCAC has the following responsibilities:

- Receive reports of the small business ombudsman of the governor's office;
- Evaluate the impact of the Air Conservation Law and related rules on small business;
- Review and assess the impact of enforcement policies on small business operations;

- Recommend to the Department of Natural Resources, the Missouri Air Conservation Commission and the General Assembly changes in procedure, rule or law that would facilitate small business compliance with the Air Conservation Law;
- Recommend to the Missouri Air Conservation Commission rules for expedited review of modifications for small business;
- Conduct hearings, determine facts and make investigations consistent with the purposes of the small business technical assistance activity conducted under Section 643.173 (RSMo).

Currently there are four individuals serving on the SBCAC: Bruce Morrison, chairman, St. Louis; Jack Lonsinger, vice-chairman, Excelsior Springs; Joel Braun, Fenton; and Scott Totten of the Missouri Department of Natural Resources. The committee began meeting in 1998 to become familiar with the environmental issues that small businesses face.

The small business technical assistance activity is performed in the Technical Assistance Program (TAP), a non-regulatory service of DNR. TAP's business assistance unit carries out the activities and provides administrative support to the SBCAC. TAP's mission is to provide information, assistance, education and training to business owners, farmers, local governments and the general public on how to control or reduce pollution. For more information, you can contact DNR's Technical Assistance Program at 1-800-361-4827 or (573) 526-6627.

OTHER AIR POLLUTANTS

In addition to the six criteria pollutants, DNR's Air Pollution Control Program also regulates other pollutants, including asbestos and hazardous air pollutants (HAPS).

ASBESTOS: Asbestos is a naturally occurring mineral that takes the form of hollow microscopic fibers. Before it was recognized as a carcinogen, asbestos was widely used for insulation and fireproofing. With age, it breaks down and becomes a hazard to anyone who breathes its fibers. Federal and state laws regulate the removal of asbestos from buildings and DNR monitors these activities.

HAZARDOUS AIR POLLUTANTS (HAPS):

Some air pollutants can cause quick and painful death, cancer, reproductive disorders and environmental damage such as acid rain. The EPA has designated these pollutants as Hazardous Air Pollutants (HAPS), which may present a hazard to public health and safety when released in sufficient quantity.

Major Air Pollutants

The benchmarks for clean air in Missouri are the National Ambient (outdoor) Air Quality Standards (NAAQS) set by EPA under the Clean Air Act. The standards address six "criteria pollutants" considered harmful to public health and the environment: ozone, lead, inhalable particles, carbon monoxide, nitrogen dioxide and sulfur dioxide. These standards are found on page 7.

OZONE (URBAN SMOG): Ground-level ozone is a colorless gas, the most harmful part of what we commonly know as "smog." Ozone is not directly emitted. It forms on sunny hot summer days when sunlight causes a reaction between volatile organic compounds (VOCs) and nitrogen oxides (NOx). Vehicles, power plants and industrial boilers are common sources of nitrogen oxides. Gasoline powered vehicles are a major source of VOCs.

"Good up high - bad nearby"

There are two types of ozone: stratospheric (upper atmosphere) and ground-level ozone. Ozone in the stratosphere occurs naturally and is desirable, shielding the earth from ultraviolet rays. However, ozone at ground level is a powerful respiratory irritant.

AIRBORNE LEAD: In Missouri, airborne lead and its compounds are produced mainly by lead smelters. Children under six are the most endangered by airborne lead, so the standard has been set to protect their health. In 1985, 73 percent of airborne lead came from vehicle exhaust pipes. This dropped to 34 percent by 1988

due to federal controls on gasoline that started in the mid-1970s.

INHALABLE PARTICLES: Inhalable particles include airborne dust, pollen, soot and aerosol sprays. Scientists also sometimes refer to these as "particulate matter." Current federal standards apply to particles less than 10 microns in diameter, or PM10, emitted mainly by vehicles, industry and farms. Wind and rainfall cause seasonal variations in PM10. In 1997 EPA set new standards for even finer particles, less than 2.5 microns in diameter, or PM2.5. (see page 7)

CARBON MONOXIDE: Carbon monoxide (CO), formed by the incomplete combustion of fuel, is one of the most common pollutants. More than 75 percent of CO emissions come from vehicle exhaust and the highest concentrations are caused by congestion in metropolitan areas. Although it is deadly, CO is transformed rapidly into carbon dioxide.

NITROGEN DIOXIDE: Almost all nitrogen dioxide is man-made. If fuel is burned above 1200 degrees Fahrenheit, airborne nitrogen forms highly reactive nitrogen oxides such as nitrogen dioxide. Principal sources are power plants, industrial boilers and vehicles.

SULFUR DIOXIDE: Sulfur oxides are produced by burning sulfur-containing fuels such as coal and oil, by smelting metals and by other industrial processes. Sulfur dioxide (SO₂) composes about 95 percent of these gases.

Health Effects of Air Pollution

<i>Pollutant</i>	<i>Health Effects</i>
OZONE A colorless gas, ozone is the most harmful part of what we commonly call “smog.”	Throat irritation, congestion, chest pains, nausea and labored breathing. Aggravation of existing lung or heart conditions, allergies and asthma. Ozone is especially harmful to those who work or play outside. Ozone is also harmful to plant life, damaging forests and reducing crop yields.
LEAD Dust-like particles ranging from light gray to black.	Low doses damage the central nervous system of fetuses and children, causing seizures, mental retardation and behavioral disorders. In children and adults lead causes fatigue, disturbed sleep, decreased fitness, and damage to kidneys, liver and blood-forming organs. High levels damage the nervous system and cause seizures, coma and death.
INHALABLE PARTICLES A broad class of particles 10 micrometers or smaller in diameter, that may include airborne soot, dust, pollen and aerosol sprays.	Increased likelihood of chronic or acute respiratory illness. Difficulty breathing, aggravation of existing respiratory or cardiovascular illness and lung damage.
CARBON MONOXIDE An odorless, colorless, tasteless, poisonous gas.	Impaired vision and manual dexterity, weakness and mental dullness. At high levels: vomiting, fast pulse and breathing, followed by slow pulse and breathing, then collapse and unconsciousness.
NITROGEN DIOXIDE A poisonous, reddish-brown to dark brown gas with a strong odor.	Lung inflammation and lower resistance to infections like bronchitis and pneumonia. Suspected of causing acute respiratory diseases in children.
SULPHUR DIOXIDE A colorless gas with a strong suffocating odor.	Irritation of throat and lungs with difficulty in breathing. Aggravation of existing respiratory or cardiovascular illness.
HAZARDOUS AIR POLLUTANTS Numerous chemicals classified by their hazardous health effects.	May cause cancer, reproductive disorders and death.
ASBESTOS Densely packed microscopic fibers, once used for insulation and fireproofing.	Lung cancer, asbestosis (a progressive irreversible scarring of the lungs) and mesothelioma (cancer of the chest cavity’s lining).

Clean Air Standards

FEDERAL OZONE STANDARD TIMELINE

- Year 1997** Data gathering begins for EPA eight-hour standard.
- Year 2000** EPA assigns area designations for attainment of eight-hour standard. One-hour standard still in effect.
- Year 2003** Missouri to submit new State Implementation Plan (SIP) showing attainment of eight-hour standard.

The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation and buildings.

NEW STANDARDS

EPA established new health-based standards for ground-level ozone and particulate matter in July 1997. The standards were established after extensive scientific reviews showed that the changes were necessary to protect public health and the environment. These new standards will bring major changes in Missouri’s approach to achieve healthy air quality in the future.

OZONE

The new ozone standard will reduce allowable concentrations from 0.12 parts per million averaged over a one-hour period to a standard of 0.08 parts per million averaged over an eight-hour period. Federal designations of areas that are in attainment of the new standards will be based on an average of three years of the fourth highest annual daily maximum eight-hour concentration.

FINE PARTICULATE MATTER

In revising the air quality standards, EPA created new standards for PM_{2.5} (fine particulate matter less than 2.5 microns in diameter). EPA’s scientific review concluded that fine particles, which penetrate deeply into the

lungs, are more damaging to human health than the coarse particles known as PM₁₀. EPA also modified the 24-hour PM₁₀ (fine particulate matter less than 10 microns in diameter) standard to be based on a three-year average of the 99th percentile of data. These standards are listed in the table on page 7.

The time schedule for this PM_{2.5} standard to be implemented and attained will take several years because a new monitoring system for this type of pollution must be created. Based on EPA guidance, Missouri has designed a monitoring network of 30 monitors. The system is required to be in operation by the end of 1999. By the end of 1998, 19 monitors were established and in operation. EPA will designate area attainment by 2003 based on three years of gathered data beginning in 2000.

AIR QUALITY MONITORS IN MISSOURI

In 1998, the Missouri Air Pollution Monitoring Network included 119 monitors of three types: national monitors, state and local agency monitors, and special-purpose monitors. National monitors provide data on national trends. State and local agencies operate other permanent monitors. Special-purpose monitors are placed for a limited time to study small areas or special sites. The monitors are placed to gather representative data as well as worst-case occurrences. There are also 44 meteorological monitors in operation throughout the state. The data collected at these monitors are used for analysis and modeling purposes.

National Ambient Air Quality Standards

Criteria Air Pollutant	Averaging Time	Primary Standard	Secondary Standard
Carbon Monoxide	One-hour maximum ^a Eight-hour maximum ^a	40 mg/m ³ ^b (35 ppm ^c) 10 mg/m ³ (9 ppm)	
Lead	Three-month Arithmetic Mean	1.5 :g/m ³ d	Same As Primary Standard
Nitrogen Dioxide	Annual Arithmetic Mean	100 :g/m ³ (0.05 ppm)	Same As Primary Standard
Ozone	One-hour average ^a Eight-hour average ^e	0.12 ppm (235 :g/m ³) 0.08 ppm (157 :g/m ³)	Same As Primary Standard Same As Primary Standard
Particulate Matter (PM ₁₀)	Annual Arithmetic Mean 24-hour average ^f	50 :g/m ³ 150 :g/m ³	Same As Primary Standard
Particulate Matter (PM _{2.5})	Annual Arithmetic Mean ^g 24-hour average ^h	15:g/m ³ 65:g/m ³	Same As Primary Standard
Sulfur Dioxide	24-hour maximum ^a Annual Arithmetic Mean Three-hour maximum ^a	365 :g/m ³ (0.14 ppm) 80 :g/m ³ (0.03 ppm)	1300 :g/m ³ (0.5 ppm)

a Not to be exceeded more than once a year for primary and secondary standards.

b mg/m³ = milligrams per cubic meter.

c ppm = part per million.

d :g/m³ = micrograms per cubic meter.

e Established for a three-year average of the fourth highest daily maximum concentration.

f Established for a three-year average of the 99th percentile of data.

g Established for a three-year average.

h Established for a three-year average of the 98th percentile of data.

AIR QUALITY MONITORS IN MISSOURI

ENVIRONMENTAL SERVICES PROGRAM

SITE SITE NAME

- 01 Audrain County Medical
- 02 South 759 Hwy St Joseph
- 03 St. Joseph Levee
- 04 Watkins Mill State Park
- 05 Hwy 33 & County Home Liberty
- 06 Schryllkill Metals North
- 07 Schryllkill Metals West
- 08 Asarco Smelter Hogan Mountain
- 09 Asarco Smelter Hogan
- 10 Asarco Smelter Glover Dam
- 11 Glover South - Tisdell Residence
- 12 39th St & MO Pacific RR
- 13 DRH Dunklin High School
- 14 Arnold & Arnold Tinsmith
- 15 DRH Dunklin High School
- 16 Mark Twain State Park
- 17 Augusta Quarry
- 18 Hwy 94 West Alton
- 19 Orchard Farm
- 20 Brunson
- 21 Jounagan North
- 22 Burtis Terre

ST. LOUIS COUNTY APC

SITE SITE NAME

- 40 3962 S Lindbergh Affton
- 41 305 Weidman Rd Quency Park
- 42 77 Hunter Ave Clayton
- 43 55 Hunter Ave Clayton
- 44 3400 Pershall Rd Florissant
- 45 10267 St Clair Rock Rd St Ann

ST. LOUIS CITY APC

SITE SITE NAME

- 33 14th & Market St
- 34 8227 S Broadway & Hurck
- 35 1122 Clark & Tucker
- 36 Newstead & Cyle Brillion
- 37 Chain of Rocks
- 38 10th & Washington
- 39 Hall Street & Carri

KANSAS CITY AIR QUALITY

SITE SITE NAME

- 23 49th & Winchester WOF
- 24 800 Broadway
- 25 724 Trost
- 26 27th & Van Brum
- 27 Richards Gebar Airport
- 28 5130 Drexel Rd
- 29 1517 Locust
- 30 11506 North 71 Hwy
- 31 4928 Main Street Plaza
- 32 Parvin Rd & Prather

SPRINGFIELD-GREENE COUNTY APC

SITE SITE NAME

- 46 5012 S Charleston
- 47 Southwest MO State
- 48 Hillcrest School
- 49 James River South

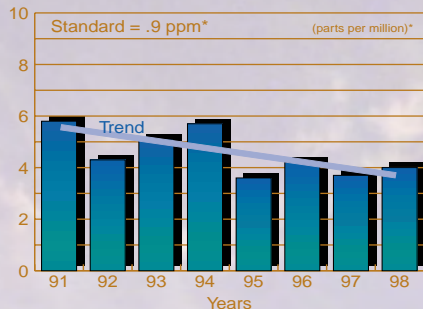


Map by: Air Pollution Control Program
Missouri Dept. of Natural Resources

AIR QUALITY TRENDS AT SELECTED LOCATIONS

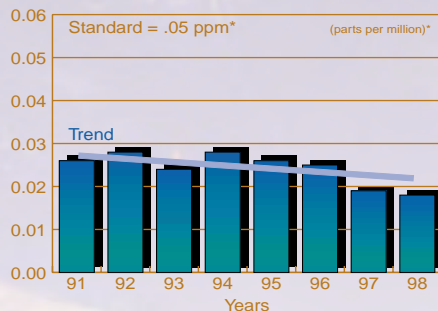
CARBON MONOXIDE 2nd 8-hr MAX, ppm

St. Charles Rock Road, St. Ann 1991-98



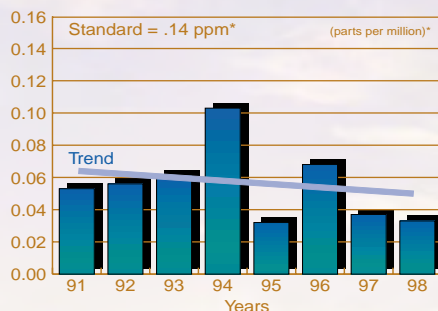
NITROGEN DIOXIDE ANNUAL MEAN, ppm

South Lindbergh, Affton 1991-98



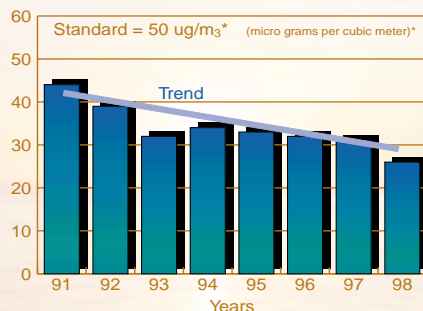
SULFUR DIOXIDE 2nd 24-hr MAX, ppm

South Charleston, Springfield 1991-98



PM10 ANNUAL MEAN, ppm

St. Joseph, Missouri 1991-98



Missouri's Air Quality

Three exceptions to good air quality in Missouri are the St. Louis area during the summer and two spots in east and southeast Missouri. The St. Louis area has repeatedly exceeded the ozone standard and is designated by the EPA as a moderate-level "nonattainment area" for ozone. This area includes the city of St. Louis and Franklin, Jefferson, St. Charles and St. Louis counties (see pages 8-9), as well as Madison, Monroe and St. Clair counties in Illinois. Small nonattainment areas for lead exist near lead smelters in Jefferson and Iron counties (see pages 8-9).

AIR QUALITY TRENDS

The department monitors air concentrations of the six criteria pollutants at selected locations throughout the state. Missouri is also monitoring attainment of the air quality standards in most areas of the state.

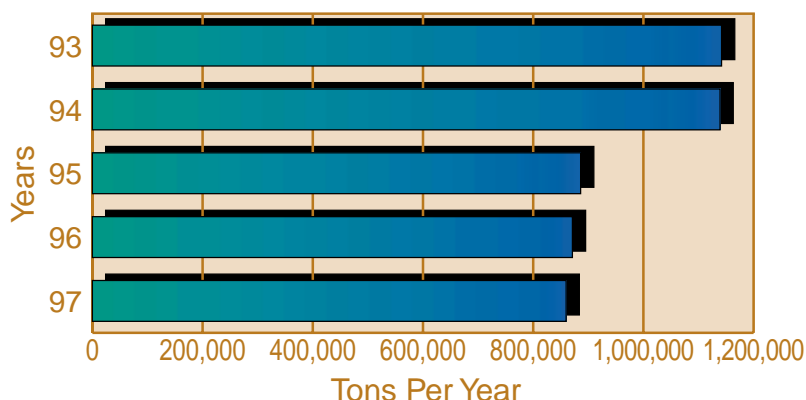
The graphs at the left are representative of general trends of ambient air data from four pollutants including carbon monoxide, nitrogen dioxide, sulfur dioxide and PM10. The overall trend as shown by the graph below is improved air quality.

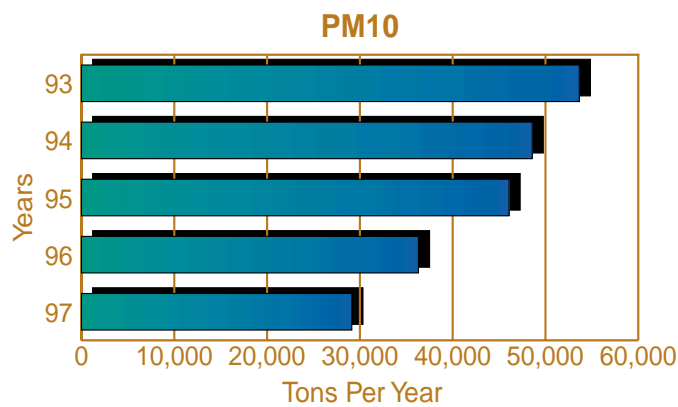
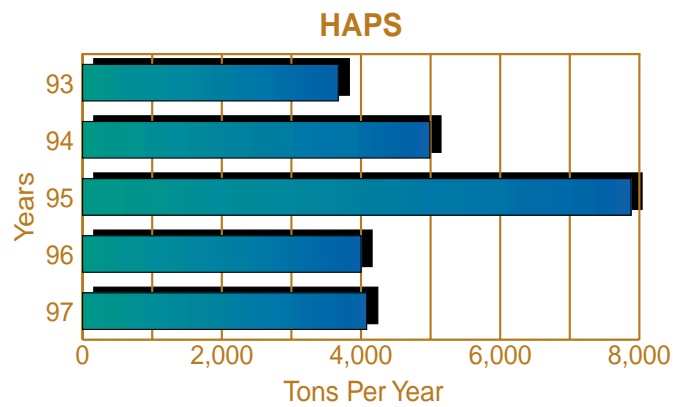
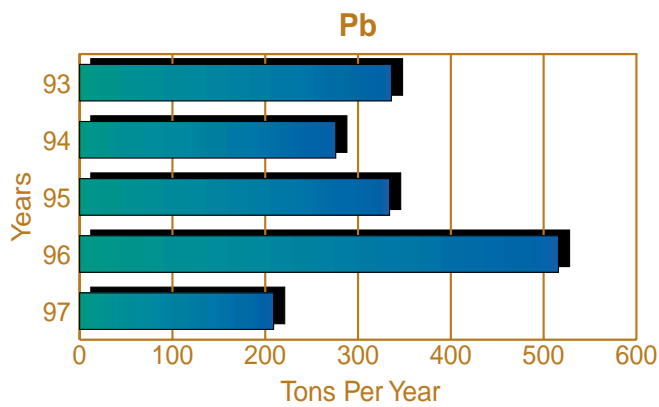
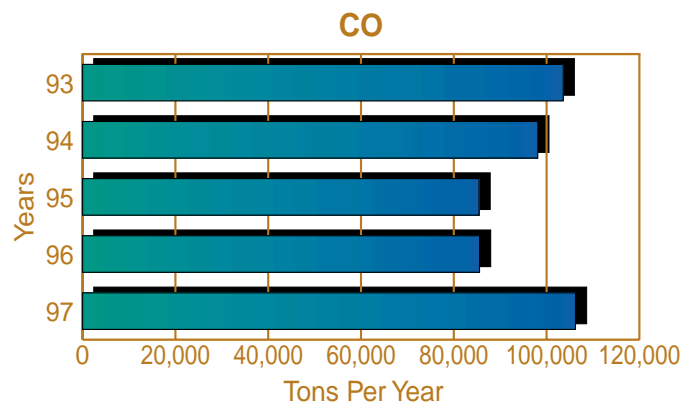
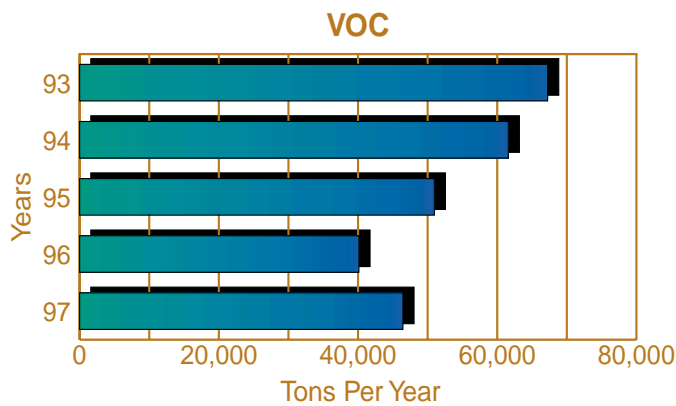
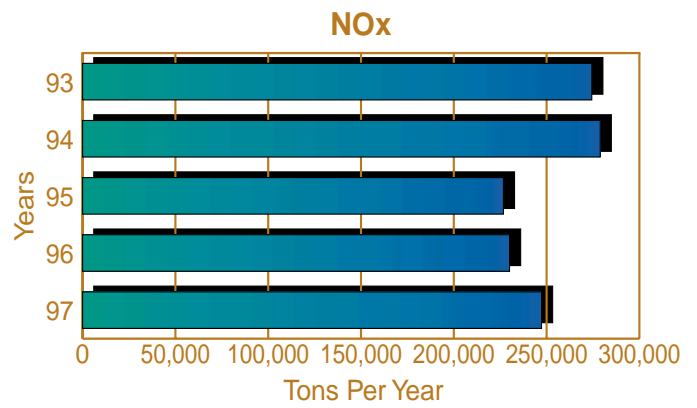
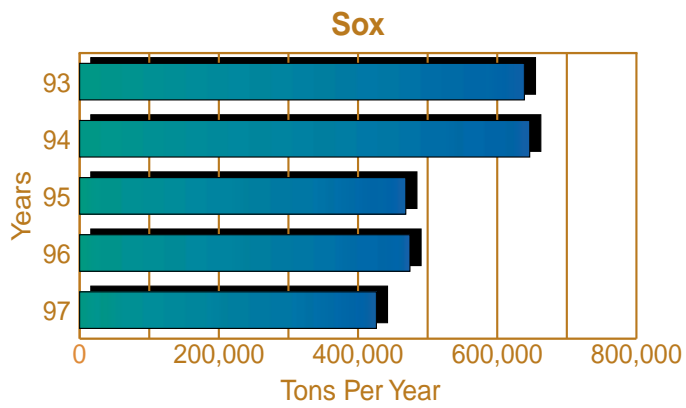
EMISSION TRENDS

The graphs below and on page 11 show the total emissions of the criteria and hazardous air pollutants (HAPs) that Missouri facilities reported for the years 1992 to 1997. As shown in Table 1, Missouri facilities continued to reduce emissions of certain pollutants into the air.

ANNUAL REPORTED EMISSIONS

Total Emissions





Ozone in Missouri

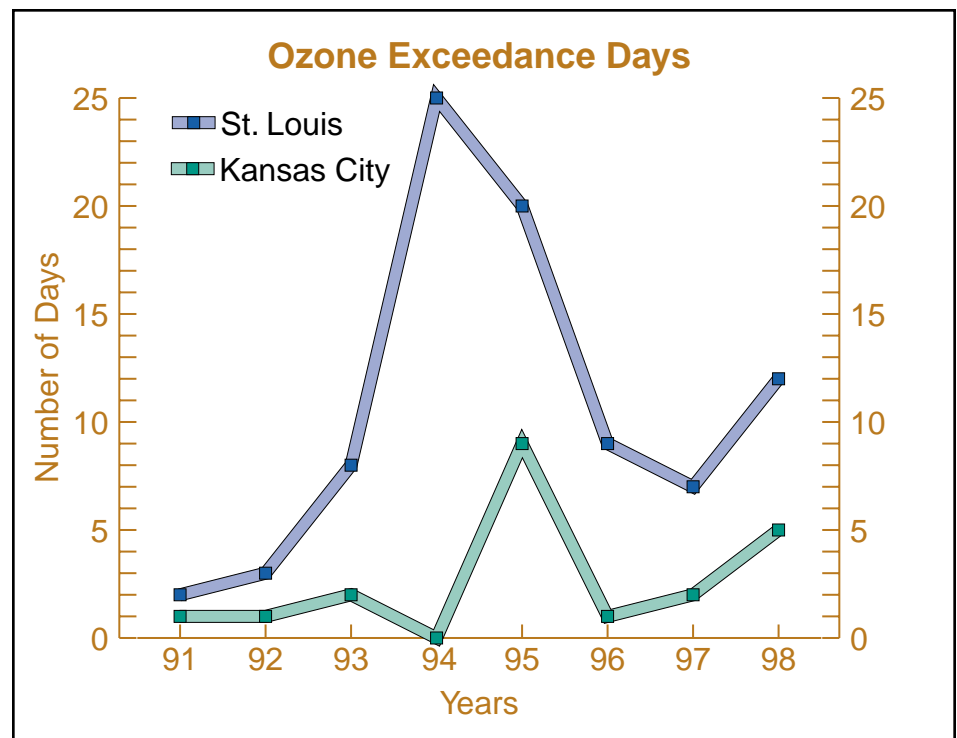
Naturally occurring ozone in the upper atmosphere protects the earth from the sun's harmful rays. But ground-level ozone is an irritant that damages lung tissue and aggravates respiratory disease. The pollutant is formed when heat and sunlight mix with volatile organic compounds (VOC) and nitrogen emissions in the lower atmosphere. People show various respiratory symptoms upon exposure to ozone. Healthy young adults may experience respiratory problems at ozone levels as low as .08 parts-per-million (ppm). Persons most susceptible to ozone include children, the elderly, persons with pre-existing respiratory problems and persons exercising outdoors.

NUMBER OF OZONE SITE EXCEEDANCES REPORTED

Approximately four million of Missouri's five million residents live

in St. Louis and Kansas City where the likelihood of ozone formation is greatest. The National Ambient Air Quality Standard of .12 ppm is typically exceeded on hot, sunny summer days. The number of days the standard is exceeded in a given year generally reflects both weather conditions and the chemicals in the area's air.

One monitoring site in the St. Louis nonattainment area violated the one-hour standard at the end of 1998. Kansas City reported no violations of the one-hour standard. Eight St. Louis sites violated the eight-hour standard for the three-year period of 1996 through 1998. Three Kansas City sites violated the eight-hour standard. Determination of compliance with the new eight-hour ozone standard will be based on the period of 1997 through 1999.

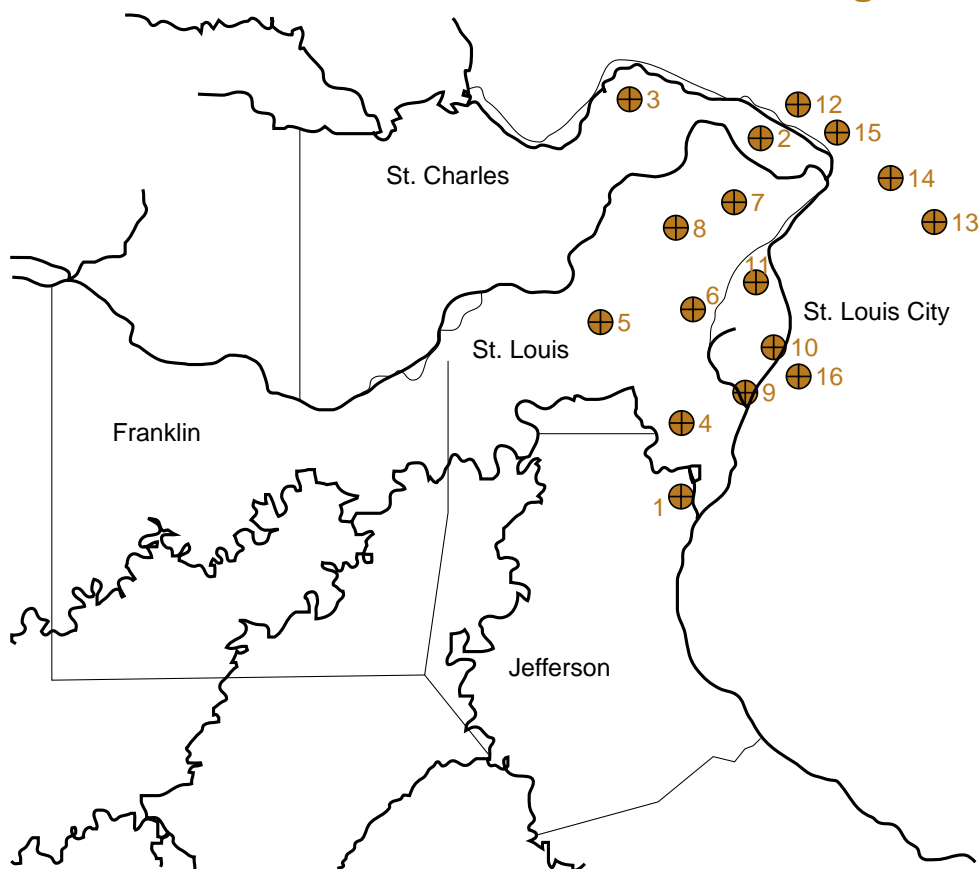


OZONE IN ST. LOUIS

Under the Clean Air Act, EPA has designated many areas in the country as nonattainment for at least one criteria pollutant. Areas in noncompliance with the ozone standard are classified marginal, moderate, serious, severe or extreme in their levels of nonattainment. The St. Louis ozone nonattainment area is one of 23 areas nationwide currently classified as a “moderate” nonattainment area.

The St. Louis moderate nonattainment area includes the city of St. Louis and the counties of St. Charles, St. Louis, Jefferson and Franklin. The Illinois side includes Madison, Monroe and St. Clair counties. The map below shows the sites for air monitors in the nonattainment area.

St. Louis Ozone Nonattainment Area Monitoring Sites



Site Number Site Name

	Missouri
01	Arnold Tenbrook, Arnold
02	West Alton
03	Orchard Farm
04	4580 S. Lindberghand Gravois, Affton
05	305 Weidman Rd., Queeny Park
06	55 Hunter Ave., Clayton
07	3400 Pershall Rd., Ferguson
08	10267 St. Charles, St. Ann
09	8227 S. Broadway, St. Louis
10	1122 Clark, St. Louis
11	Newstead and Cote Brillante

Site Number Site Name

	Illinois
12	409 Main St., Alton
13	200 W. Division, Maryville
14	Poag Road, Edwardsville
15	54 N. Walcott, Wood River
16	13th and Tudor, E. St. Louis

NUMBER OF DAYS WITH EXCESSIVE OZONE

St. Louis exceeded the ozone standard each summer in 1996, 1997 and 1998. The number of days with ozone exceedances is in the monitoring data for Missouri and Illinois below. The St. Louis ozone

nonattainment area reported 12 exceedances of the one-hour standard during the 1998 ozone season (April 1 through October 31). Eleven of the exceedances occurred in Missouri. One exceedance occurred in Illinois, at the East St. Louis site.

Number of Days with Excessive Ozone - St. Louis Ozone Nonattainment Area

Monitoring Site	1995	1996	1997	1998
Missouri				
Arnold Tenbrook, Arnold	2	1	1	1
General Electric, West Alton	4	1	1	2
2165 Hwy V, Orchard Farm	2	1	0	1
4580 S. Lindberg and Gravois, Affton	0	1	1	1
305 Weidman Rd., Queeny Park	1	0	0	1
55 Hunter Ave., Clayton	0	0	0	1
3400 Pershall Rd., Ferguson	1	0	1	1
10267 St. Charles Rock Road, St. Ann	1	0	0	1
8227 S. Broadway, St. Louis	0	1	0	1
1122 Clark and Tucker, St. Louis	0	0	0	1
Newstead and Cote Brilliante, St. Louis	1	0	0	0
Illinois				
409 Main St., Alton	1	2	0	0
200 W. Division, Maryville	1	0	0	0
Poag Road, Edwardsville	3	0	1	0
54 N. Walcott, Wood River	2	1	1	0
13th and Tudor, East St. Louis	1	0	0	1
Total	20	8	6	12

CONTROLLING ST. LOUIS OZONE

Missouri's State Implementation Plan (SIP) for St. Louis includes control measures and schedules for compliance with the Clean Air Act in order to attain the ozone standard. To reduce ambient ozone concentrations to safe levels, the state must control industrial and mobile sources of volatile organic compounds (VOCs). Major control measures in St. Louis include a vehicle emissions inspection and maintenance program, Stage II vapor recovery systems for gasoline refueling, emission control systems for existing and new industrial sources and some contingency measures in case the mandatory controls fail to attain the standard. Two control strategies leading to the greatest reductions in volatile organic compound emissions are enhanced vehicle inspection and maintenance and the use of reformulated gasoline.

VEHICLE EMISSIONS INSPECTIONS

The program for vehicle emissions testing and repair, or Inspection and Maintenance (I/M), is a key mechanism for control of mobile source emissions in the St. Louis area. This program makes up over 40 percent of DNR's state implementation plan to bring St. Louis into compliance with the National Ambient Air Quality Standards (NAAQS) for ozone, or urban smog.

Currently, vehicles are tested with a basic emissions testing program as

part of the annual safety inspection conducted at local car service facilities every year. The plan for enhanced I/M includes a more accurate test every two years. The new technology measures specific pollutants from vehicles more precisely than the current system. The enhanced tests will be performed in testing stations that do not offer repair services.

Legislation for the enhanced program was passed by the legislature in 1994, but funding for the program was removed in 1995. In 1996 DNR convened an advisory committee to seek consensus on emissions testing among all interested parties.

DNR drafted a Request for Proposal (RFP) to implement a new enhanced I/M program in the St. Louis nonattainment area. This RFP was released in late 1998, for contractors to bid on building and operating testing stations. The contract calls for enhanced vehicle emissions testing to begin in April 2000.

LOW REID VAPOR PRESSURE GASOLINE AND REFORMULATED GASOLINE

Many VOC control measures have been used in the effort to reach attainment of the ozone standard. In 1994, low vapor pressure gasoline was implemented in St. Louis. Reid vapor pressure (RVP) is a measure of the volatility of gasoline or its tendency to evaporate into the air. Lowering RVP reduces evaporative emissions of gasoline. Since 1994, a state regulation has restricted the RVP of gasoline sold in the St. Louis nonattainment from June 1 through September 15.

In July 1998, Gov. Carnahan submitted a letter requesting that the U.S. Environmental Protection Agency (EPA) require federal Reformulated Gasoline (RFG) for the Missouri portion of the St. Louis nonattainment area beginning June 1, 1999. RFG is a special gasoline formula designed to burn cleaner than conventional gasoline, and to reduce both exhaust and evaporative emissions. RFG is administered and enforced by the EPA.

AREA RECLASSIFICATION ("BUMP-UP")

Moderate nonattainment areas were required to meet the National Ambient Air Quality Standard for ozone by Nov. 15, 1996. Because St. Louis failed to meet this goal, the area may be reclassified by EPA, or "bumped-up" in its nonattainment status from moderate to serious. In 1998, the EPA did not take any action to bump-up the area, but did propose a policy that may allow St. Louis to obtain an attainment date extension. DNR committed to meet the requirements of EPA's policy. DNR must demonstrate that St. Louis is impacted by transported air pollution from upwind areas. Also, all required local control measures must be implemented in St. Louis. An obstacle to the attainment date extension is a lawsuit filed in July 1998 by environmental groups against the EPA for failure to bump-up the St. Louis area. Should this bump-up occur, St. Louis would be obligated to meet the more stringent requirements of the Clean Air Act Amendments of 1990 for serious nonattainment areas.

OZONE IN KANSAS CITY

The Kansas City Ozone Maintenance Area includes Clay, Jackson and Platte counties in Missouri as well as Johnson and Wyandotte counties in Kansas. The Kansas City area was designated as a sub-marginal nonattainment area under the Clean Air Act Amendments of 1990. In 1992, the Kansas City area demonstrated attainment of the standard and was redesignated to attainment.

During the three-year period of 1995 through 1997, the Kansas City Maintenance Area experienced a violation of the ozone standard. The Kansas City Maintenance Area reported no violations of the ozone standard during the three-year period of 1996 through 1998. The table below lists the ozone exceedances experienced in the Kansas City Maintenance Area from 1995 through 1998. The Kansas City area reported four exceedances of the one-hour standard during the 1998 ozone season. Three of the exceedances occurred in Missouri. One exceedance occurred in Kansas.

Number of Days with Excessive Ozone - Kansas City Ozone Maintenance Area

<i>Monitoring Site</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
<i>Missouri</i>				
Watkins Mill State Park Road, Lawson	3	0	0	1
Hwy. 33 and County Hwy, Liberty	3	0	1	2
49th and Winchester WOF, Kansas City	2	0	0	0
Richards-Gebaur AFB, Kansas City	0	0	0	0
11500 N. 71 Hwy. KCI Airport Kansas City	1	0	1	1
<i>Kansas</i>				
Anne Avenue, Wyandotte County	0	1	0	1
<i>Total</i>	<i>9</i>	<i>1</i>	<i>2</i>	<i>5</i>

CONTROLLING KANSAS CITY OZONE

DNR's Air Pollution Control Program developed an ozone control strategy after working with the Mid-America Regional Council (MARC), the Kansas Department of Health and Environment, Kansas City local agencies and industrial representatives. This strategy is to be implemented in place of the contingency measures presented in the 1992 Kansas City Ozone Maintenance State Implementation Plan. DNR presented this plan to the Missouri Air Conservation Commission in April 1997. The commission requested DNR to remove inspection and maintenance from this plan and replace it with a more expeditious control program. After discussions with MARC and

other community representatives, a control strategy including Reformulated Gasoline (RFG) was developed. The Missouri Air Conservation Commission adopted the Maintenance Plan in February 1998. This plan requires that DNR recommend that the governor request the EPA to include the Kansas City area into the federal RFG program by April, 2000.

LOW REID VAPOR PRESSURE GASOLINE AND REFORMULATED GASOLINE

The Kansas City area has experienced ozone problems since the late 1970s. Reid vapor pressure is a measure of the tendency of gasoline to evaporate into the air. Lowering gasoline's RVP reduces its evaporative emissions. From 1990 through 1997, the RVP of gasoline in Kansas City has been reduced on three occasions. The latest change occurred during the summer of 1997. The Missouri

Department of Natural Resources and Kansas Department of Health and Environment both required that 7.2 Reid Vapor Pressure gasoline be sold in the Kansas City Maintenance Area during the peak ozone season.

The revised maintenance plan calls for reformulated gasoline to be sold in the Kansas City area starting in 2000. RFG would replace low Reid vapor pressure gasoline as the fuel control strategy. DNR plans to assist the Kansas Department of Health and Environment in hosting a fuel summit in the Kansas City area in 1999. This meeting will be similar to the 1998 fuel summit held in St. Louis, and will bring state and local government regulators together with industry, environmental groups and other interested parties to discuss fuel control strategies to improve Kansas City air quality.



Lead In Missouri

LEAD NONATTAINMENT AREAS

Various lead compounds are associated with damage to the brain and nervous system. Three sites in southeast Missouri are designated by EPA as nonattainment areas for airborne lead. A smelting facility is located at each site. The federal Clean Air Act Amendments of 1990 require states to bring the air at all nonattainment sites into compliance

with the lead standard. With the cooperation of the Doe Run Company, control strategies were developed for sites in Herculaneum, Buick and Glover, MO. New controls are being planned for the Doe Run Herculaneum smelter. The state will continue to enforce controls such as the enclosure and ventilation of processes, better air filtration and improvements in material handling.

Lead Nonattainment Areas



Nonattainment Area

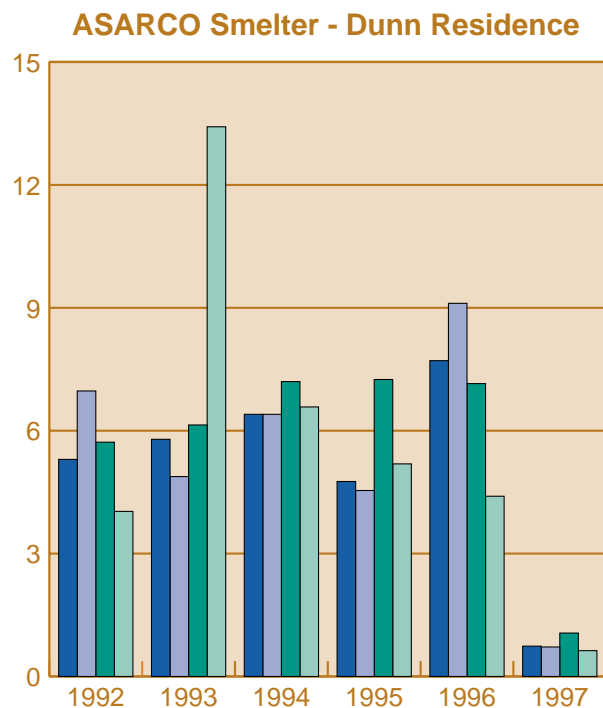
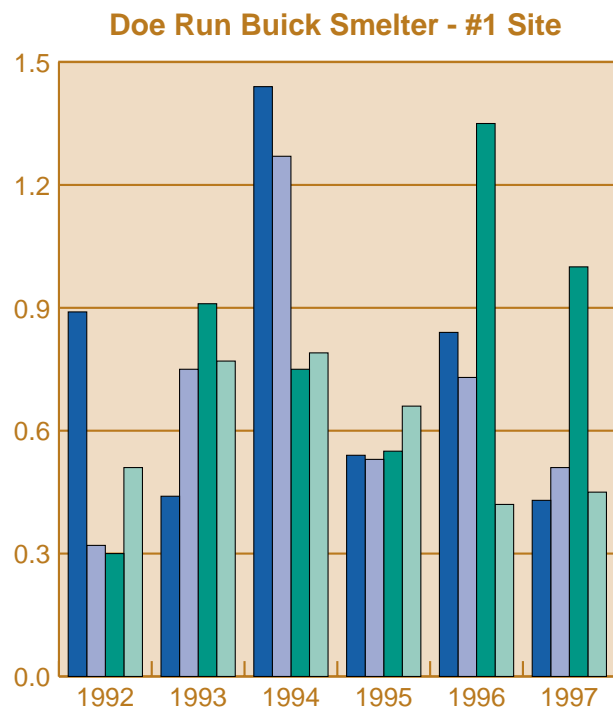
- 1 City of Herculaneum
- 2 Dent Township
- 3 Liberty/Arcadia Township

Primary Lead Emitter

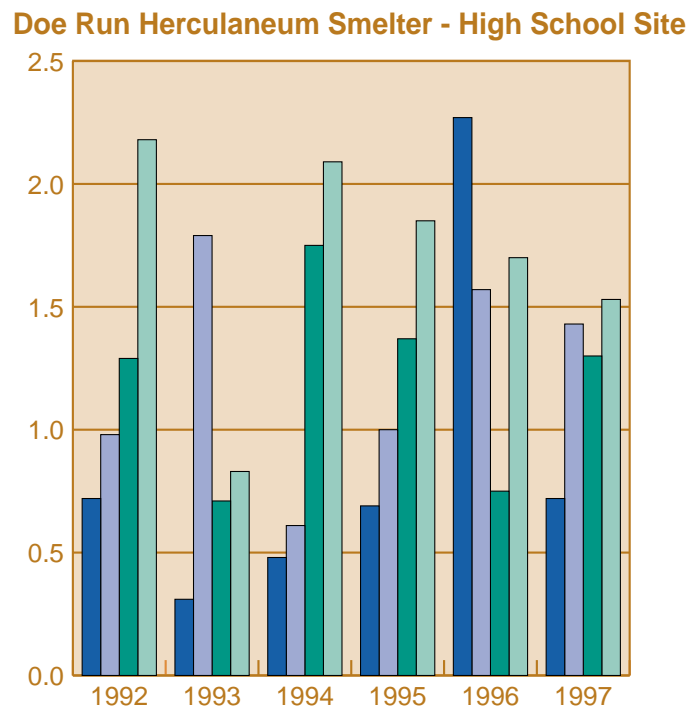
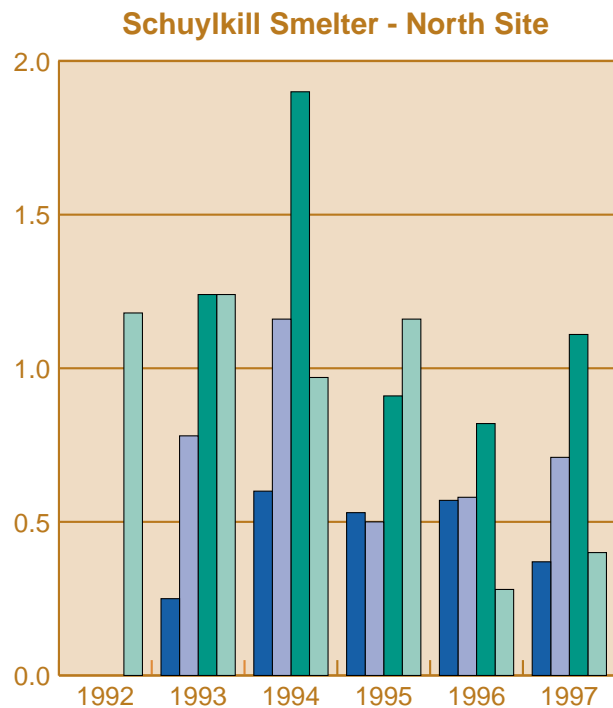
- Doe Run, Herculaneum
Doe Run, Buick
Doe Run, Glover

AVERAGE QUARTERLY CONCENTRATIONS OF LEAD IN AMBIENT AIR NEAR LEAD SMELTERS IN MISSOURI

Since Missouri is the chief lead-mining district in the nation, with several smelters, the department conducts ambient monitoring for lead. Developed by EPA, the health standard for lead defines the maximum safe level for human exposure to this otherwise useful metal. The National Ambient Air Quality Standard for lead is 1.5 micrograms per cubic meter, averaged from all the monitor filters in one-quarter of the year. Individual filters may be much higher than the standard.



■ 1st Qtr. ■ 2nd Qtr. ■ 3rd Qtr. ■ 4th Qtr.



Source: U.S. Environmental Protection Agency national AIRS database.



About The Air Pollution Control Program

The mission of DNR's Air Pollution Control Program is "to maintain purity of the air resources of the state to protect the health, general welfare and physical property of the people, maximum employment and the full industrial development of the state." The program serves the public with technology, planning, enforcement, permitting, financial and information services to achieve this mission.

TECHNICAL SUPPORT

The staff analyzes the quality of Missouri air using chemistry, meteorology, mathematics and computer programming. Staff members research the sources and effects of air pollution, collecting and maintaining an annual inventory of sources that emit air pollution. In conjunction with the DNR's Environmental Services Program and four local agencies, the staff designs and coordinates an air-monitoring network and analyzes monitoring data. The network provides air quality data from more than 40 locations around the state. Using the monitoring data and other data on source emissions and the weather, the staff runs computer models of the atmosphere to predict air quality.

PLANNING

The program develops rules designed to protect Missouri's air quality while encouraging economic development. Public participation is a vital part of the cooperative process of developing guidelines and regulations. Staff work with businesses, federal, state and local government agencies, environmental groups and the public in a number of ways including

exchanging ideas and information on clean air issues with advisory groups, workgroups and in workshops.

The program works closely with the U.S. Environmental Protection Agency as part of the national effort to improve air quality through the Clean Air Act. Staff members research and analyze complex environmental issues to develop air pollution control strategies that will ensure Missouri's progress in achieving and maintaining air quality improvements. These air pollution control strategies are included in state implementation plans to control specific pollutants. The Missouri Air Conservation Commission (MACC) (see p. 24) approves the state implementation plans and rule actions after they have gone through a public hearing process. Once rules are adopted by MACC, they become effective through publication in the *Missouri State Code*. State implementation plans and associated rules adopted by the MACC are submitted to EPA for inclusion in the federally approved state plan.

PERMITS

Engineers review construction permit applications of new and modified emission sources to ensure that facilities minimize the release of air contaminants and will meet all the requirements of the law and regulations. Operating permit applications, similar to business licenses, are also received and reviewed. Operating permits identify all the air pollution control requirements of a source of air pollution. This makes it clear to sources and citizens what is expected.

ENFORCEMENT

The program responds to complaints about air quality and helps businesses comply with various federal, state and local rules. The staff conduct routine site inspections and oversee the testing of smoke stacks, asbestos removal, gasoline vapor recovery equipment and other sources of air pollution through regional offices. When a source violates an air quality requirement, staff work with the facility to correct the problem and may take additional action, including the assessment of penalties necessary to obtain compliance.

ADMINISTRATION

The staff provide budgeting, procurement, public information and personnel services. Staff also provide liaisons for the Missouri Air Conservation Commission, the Environmental Protection Agency, the

Missouri Department of Health, local air agencies in Kansas City, St. Louis, St. Louis County and Springfield, the American Lung Association and the news media.

REVENUES

The Air Pollution Control Program receives funds from three sources: general tax revenue approved by the Missouri General Assembly, federal funds from EPA and fees collected by the program. Fee revenues come from several sources. The program collects four types of fees. Since 1984, the state has collected a fee to test the emissions of 1.2 million motor vehicles in the city of St. Louis and in Jefferson, St. Charles and St. Louis counties. Since 1993, the program has collected an emission fee from air contaminant sources under the Missouri Air Conservation Law. Since 1989, the program has collected fees

to ensure the safe removal of asbestos, a cancer-causing mineral once used to insulate buildings. Funds received by the Air Pollution Control Program are shown in the table and charts below.

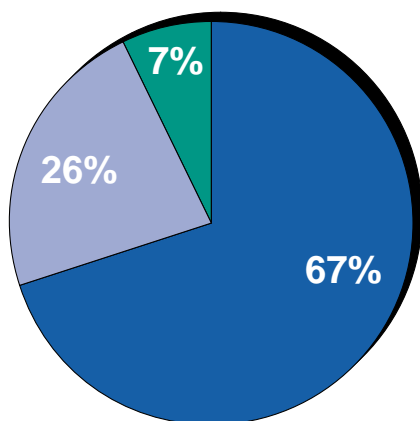
LOCAL AGENCIES

Four governments in Missouri practice local control over air pollution: Kansas City, St. Louis, St. Louis County and Springfield. A city or county may have its own air agency under two conditions. The city must be able to enforce its rules and its rules must be as strict as the state's. Local agencies issue permits, maintain monitoring networks and may enforce asbestos-removal laws. The local agencies are partially funded by the Environmental Protection Agency through the Department of Natural Resources.

1998 Revenue by Source

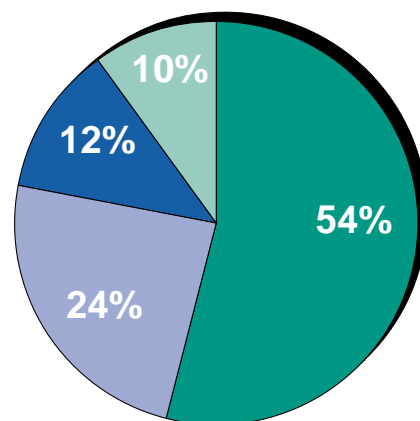
<i>General Revenue</i>	<i>Federal</i>	<i>Fees</i>	<i>Total</i>
\$721,315	\$2,217,000	\$6,982,000	\$9,920,315

1998 Revenue Sources



General Revenue Federal Grant Fees

1998 Expenses



Salaries & Fringes Operating Grants Overhead

MEL CARNAHAN
GOVERNOR
STATE OF MISSOURI

1998 **Missouri Air** **Conservation** **Commission**

Michael Foresman
Chair

Barry Kayes
Vice-chair

Harriet Beard
Andy Farmer
Bill Thomas
David Zimmerman

Steve Mahfood
Director
Department of
Natural Resources

John Young
Director
Division of
Environmental Quality

Roger D. Randolph
Director
Air Pollution
Control Program

Missouri Air Conservation Commission

Created by the Missouri General Assembly in 1965, the Missouri Air Conservation Commission has seven members appointed by the governor. The commission carries out the Missouri Air Conservation Law (Chapter 643, Revised Statutes of Missouri). The primary duty of the commission is to achieve the National Ambient Air Quality Standards set by the Environmental Protection Agency. When the quality of the air meets these standards, an area is said to be “in attainment.” If monitors detect too much of one pollutant, however, the area is a “nonattainment area” for that pollutant.

Members serve four-year terms and the commission meets at least nine times per year. All meetings are open to the public and comments are welcome. Most meetings include public hearings where rule actions, variances from rules and other matters are heard.

At meetings, the commission adopts, amends and rescinds rules; hears appeals of enforcement orders and permit conditions; initiates legal action to enforce rules; assigns duties to local air pollution control agencies; classifies regions as attainment or nonattainment areas and approves plans to meet national standards in nonattainment areas.

Notices of public hearings are published in the public-notice sections of these newspapers: *Columbia Daily Tribune*, *Poplar Bluff Daily American Republic*, *Springfield News-Leader*, *The Kansas City Star*, *St. Joseph News Press* and *St. Louis Post-Dispatch*. They are also published in the *Missouri Register*. To be placed on a mailing list to receive notice of public hearings and meetings, you may contact the Air Pollution Control Program at (573) 751-4817.

Information on public hearings and Missouri Air Conservation Commission meetings is also available on our home page at (www.dnr.state.mo.us/dnr/apcp).



1998 RULES UPDATE

The Missouri Air Conservation Commission heard testimony on 20 rule actions. The following table lists several of the more significant rules presented to the commission.

Rules Regulating Air Quality Problems			
<i>Rule</i>	<i>Area</i>	<i>Title</i>	<i>Purpose of Rule</i>
10 CSR 10-5.300	St. Louis	Control of Emissions from Solvent Metal Cleaning	This rule amendment specifies equipment, operating procedures and training requirements for the reduction of volatile organic compound (VOC) emissions from solvent metal cleaning operations.
10 CSR 10-6.330	Statewide	Restriction of Emissions from Batch-Type Charcoal Kilns	This new regulation establishes emission limits for batch-type charcoal kilns based on operational parameters that reflect the Best Available Control Technology (BACT) for this industry.
10 CSR 10-6.110	Statewide	Submission of Emission Data, Emission Fees and Process Information	This rule amendment deals with submittal of emission information, emission fees and public availability of emission data. It provides procedures for collection, recording and submittal of emission data and process information so the state can calculate emissions for state air resource planning.
10 CSR 10-2.070, 10-3.090, 10-4.070, 10-5.160	Kansas City Outstate Springfield St. Louis	Restriction of Emission of Odors	These rule amendments remove the current odor emission exemption for large (Class I) animal feeding operations and require preparation and implementation of an odor control plan at each facility. These amendments also restrict the emission of odorous matter from Class I facilities.

STATE IMPLEMENTATION PLANS/AIR QUALITY PLANS

DNR's Air Pollution Control Program submits rules to the Missouri Air Conservation Commission and writes State Implementation Plans (SIP), air quality plans that indicate how Missouri will achieve and maintain the federal standards for ozone and other pollutants.

The State Implementation Plan is the primary method for achieving National Ambient Air Quality Standards (NAAQS) to comply with the Clean Air Act. Distinct air quality plans are developed for specific air pollutants. Whenever concentrations of one of these pollutants exceed federal standards a SIP is developed to bring the concentration to an acceptable level. SIP development includes a new inventory of emission levels, computer modeling of the effects of emission controls, control strategies and finally regulatory requirements or rules.

Another type of air quality plan, called a "State Plan" also involves emission inventory, controls and rules, but addresses emission source types as well as specific pollutants.

The following table lists the SIPs and other state air quality plans that the program worked on in 1997 and 1998.

State Implementation Plans (SIPs)

<i>SIP/Plan</i>	<i>SIP/Plan Subject</i>
Conformity SIP	St. Louis Transportation and Conformity Plan Kansas City Transportation and Conformity Plan
Inspection and Maintenance (I/M) SIP	Construction and operation of vehicle emission inspection stations in St. Louis ground-level ozone nonattainment area
Carbon monoxide (CO) SIP	Carbon monoxide maintenance plan for the St. Louis area includes controls already implemented to achieve compliance with national standards and contingency control measures in the event of future violations
Nitrogen oxide (NOx) SIP	Ozone transport, new NOx rules including emissions trading
Sulfur dioxide (SO ₂) SIP	St. Joseph Power and Light source agreement
Lead SIPs	Three separate SIPs for Doe Run Herculaneum, Buick and Glover sources
St. Louis 15% Rate of Progress SIP	Changes for reformulated gasoline (RFG) and enhanced vehicle inspection and maintenance (I/M)
Kansas City Area Maintenance SIP	Reformulated gasoline (RFG) and control measures for volatile organic compounds (VOCs) in the Kansas City maintenance area
Regional Haze SIP	Regional haze
Revised NAAQS SIP	National Ambient Air Quality Standards for particulate matter (PM ₁₀ , PM _{2.5}) and ozone
State Plan (incinerators)	Hazardous, Medical and Infectious Waste Incinerators
State Plan (landfills)	Municipal Sanitary Landfills

Air Quality Information

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Air Pollution Control Program.....(573) 751-4817

P.O. Box 176 Jefferson City, MO 65102-0176

Technical Assistance Program.....1-800-361-4827

General DNR Information.....1-800-334-6946

Relay Missouri (for use by the hearing impaired)1-800-735-2966

Jefferson City Regional Office.....(573) 751-2729

Kansas City Regional Office.....(816) 554-4100

Northeast Regional Office (Macon).....(660) 385-2129

St. Louis Regional Office.....(314) 301-7100

Southeast Regional Office (Poplar Bluff).....(573) 840-9750

Southwest Regional Office (Springfield).....(417) 891-4300

IN CASE OF AN ENVIRONMENTAL EMERGENCY:

Missouri Department of Natural Resources

Emergencies only 24 hours a day.....(573) 634-2436

Emergency Response Office weekdays.....(573) 526-3315

U.S. Environmental Protection Agency - Region VII.....(913) 551-7020

National Response Center.....1-800-424-8802

(A service of the U.S. government for reporting oil and chemical spills)

CHEMTREC1-800-424-9300

(A service of the chemical industry for reporting chemical spills, leaks and fires)

OTHER AIR QUALITY ORGANIZATIONS:

Missouri Department of Health.....(573) 751-6400

St. Louis Regional Clean Air Partnership.....(314) 645-5505

Heartland Sky (Kansas City)(816)-474-4240

American Lung Association of Eastern Missouri(314) 645-5505

American Lung Association of Western Missouri(816) 842-5242

Kansas City Health Department.....(816) 513-6314

City of St. Louis - Division of Air Pollution Control(314) 613-7300

St. Louis County - Department of Health(314) 615-8923

Springfield-Greene County - Air Pollution Control Authority.....(417) 864-1662

AIR POLLUTION INFORMATION ON THE INTERNET

There is a wealth of information about air quality issues on the Internet. You may find some of the following World Wide Web addresses helpful (addresses were correct at the date of this publication):

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Air Pollution Control Program	(www.dnr.state.mo.us/deq/apcp)
Technical Assistance Program	(www.dnr.state.mo.us/deq/tap)
General DNR Department Information	(www.dnr.state.mo.us)
The complete Missouri Air Law	(www.moga.state.mo.us/statutes/c643.htm)
DNR - Air Quality Monitoring	(www.dnr.state.mo.us/deq/esp)

U.S. ENVIRONMENTAL PROTECTION AGENCY

EPA Region VII (Kansas City)	(www.epa.gov/region07/)
Office of Air and Radiation	(www.epa.gov/oar/)
Air Links - EPA Air Quality Publications.....	(www.epa.gov/airlinks/)

OTHER AIR QUALITY ORGANIZATIONS:

St. Louis Regional Clean Air Partnership	(www.cleanair-stlouis.com/)
Heartland Sky (Kansas City)	(www.marc.org/heartsky.htm)
American Lung Association	(www.lungusa.org/)
Air and Waste Management Association	(www.awma.org/)
Missouri Department of Health	(www.health.state.mo.us/)

DAILY AIR QUALITY FORECASTS:

Kansas City	(www.marc.org/airquality/airqual.htm#skycast)
St. Louis	(www.cleanair-stlouis.com/4cast.htm)

GLOSSARY

Attainment: The designation given to an area that meets all National Ambient Air Quality Standards.

Carbon monoxide (CO): A poisonous gas that is odorless, colorless and tasteless. At low levels it causes impaired vision and manual dexterity, weakness and mental dullness. At high levels it may cause vomiting, fast pulse and breathing followed by a slow pulse and breathing, then collapse and unconsciousness.

Inhalable particles (PM10 and PM2.5): A broad class of particles sometimes simply referred to as "soot." One of the "criteria pollutants," PM10 particles are 10 microns or smaller in diameter. The pollutant increases the likelihood of chronic or acute respiratory illness. It also causes difficulty in breathing, aggravation of existing respiratory or cardiovascular illness and lung damage. In addition it causes decreased ability to defend against foreign materials. New laws have just been passed regulating PM2.5, an even smaller and more harmful class of fine particles less than 2.5 microns in diameter. Missouri is beginning to monitor its concentrations.

Lead (Pb): Airborne lead appears as dust-like particles ranging from light gray to black. Low doses may damage the central nervous system of fetuses and children, causing seizures, mental retardation and behavioral disorders. In children and adults, lead causes fatigue, disturbed sleep and decreased fitness, and it damages the kidneys, liver and blood-forming organs. It is suspected of causing high blood pressure and heart disease. High levels damage the nervous system and cause seizures, comas and death.

Missouri Air Conservation Commission: The governor appoints this seven-member group. The commission carries out the Missouri Air Conservation Law (Chapter 643, Revised Statutes of Missouri). The primary duty of the commission is to help Missouri achieve the National Ambient Air Quality Standards set by the Environmental Protection Agency.

National Ambient Air Quality Standards (NAAQS): Standards set by the U.S. Environmental Protection Agency that limit the amount of six air pollutants allowed in outside air. These six are carbon monoxide, inhalable

particles, lead, nitrogen dioxide, ozone and sulfur dioxide. The limits are based on what is safe for humans to breathe.

Nitrogen dioxide (NO2): A poisonous, reddish-brown to dark brown gas with an irritating odor. It can cause lung inflammation and can lower resistance to infections like bronchitis and pneumonia. It is suspected of causing acute respiratory disease in children.

Nonattainment area: A region in which air monitors detect more of a pollutant than is allowed by the National Ambient Air Quality Standards set by the Environmental Protection Agency. EPA may designate a region as a "nonattainment area" for that pollutant.

Ozone (O3): Three atoms of oxygen; a colorless gas with a pleasant odor at low concentrations. The layer of ozone in the atmosphere protects the earth from the sun's harmful rays. Ground-level ozone is a summertime hazard produced when hydrocarbons from car exhaust and other fumes mix in the presence of sunlight with oxides of nitrogen from power plants and other sources. Ozone is more easily recognized in smog, a transparent summer haze that hangs over urban areas. The result is a gas that aggravates respiratory illness, makes breathing difficult and damages breathing tissues. Victims include people with lung disease, the elderly, children and adults who exercise outside.

Reformulated Gasoline (RFG): A fuel blend designed to reduce air toxins and volatile organic compound (VOC) emissions by decreasing the amount of toxic compounds such as benzene, lowering the evaporation rate and increasing the amount of oxygenate blended with the fuel.

State Implementation Plan (SIP): A plan submitted by the Missouri Department of Natural Resources to the Environmental Protection Agency for complying with national air quality standards. Each plan concerns one air pollutant for one nonattainment area.

Sulfur Dioxide (SO2): A colorless gas with a strong, suffocating odor. Causes irritation of the throat and lungs and difficulty in breathing. It also causes aggravation of existing respiratory or cardiovascular illness.